Endocrine Disruptors & Wastewater Treatment Research

ORD, Regions and Sewer Districts Collaborate



Research Questions

Why do municipal wastewater treatment plants emit endocrine disruptors and can treatment be improved?

ORD

Experimental design

EDC bioassays

Analytical methods

Data interpretation

Project management

Regions

Coordination with plants

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Analytical methods

Sample analysis

Regulatory Perspective

Sewer Districts

Access to plants

Sampling support

Experimental design

50 Effluent Survey

Purpose

To determine if the estrogenicity of wastewater treatment effluents can be related to plant design and operation

Approach

Collected 50 municipal effluents from all 10 Regions

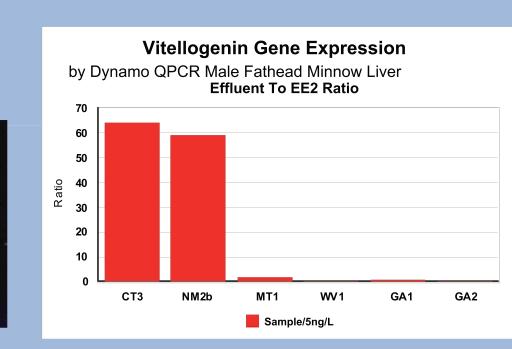
Determined the estrogenicity of effluents using Real-time PCR (RT-QPCR) for vitellogenin gene expression (Vg)

Status

50 effluents completed, resmapling and collection of plant info next







Anaerobic Digestion Performance

Purpose

To quantify the transformations and destruction of EDCs in anaerobic digestion

Approach

Intensively sample full-scale digesters at Chicago's Calumet plant (domestic & industrial)

Monitor for known estrogenic substances: alkylphenolic compounds (nonylphenol and its lower ethoxylates) and steroid

hormone estrogens

Status

Study to be conducted in Summer 2004

Land Application of Biosolids

Purpose

To determine the treatability of EDCs in when biosolids are applied to land

Approach

As part of a larger study on the environmental impact of land application of biosolids, EDCs will be monitored as a function of time and soil depth following application to land

Target analytes are the estrogenic alkylphenolic compounds (nonylphenol and its lower ethoxylates)

Status

Study to be conducted in Summer 2004



Courtesy of
G.K. Evanylo

CONTACTS

Gregory Sayles (sayles.gregory@epa.gov, 513-569-7607),

Jim Lazorchak, Marc Mills – EPA/ORD

Al Alwan, Peter Howe, Dennis Wesolowski,

Larry Zintek – EPA/Region 5

Bernard Sawyer – Metropol. Water Reclam. District Chicago

Expected Products from Partnership

Treatment performance data and strategies to improve treatment for use by risk managers such as plant operators and regulators